Gonorrhea

A. Etiologic Agent: *Neisseria gonorrhoeae,* non-motile, gram negative diplococcus

B. Mode of Transmission:

Adults: sexual contact

The risk of transmission of N. gonorrhoeae from an infected woman to the urethra of her male partner is approximately 20% per episode of vaginal intercourse and rises to 60 to 80% after four or more exposures. The risk of male-to-female transmission has been well studied; it probably approximates 50 to 70% per contact, with little evidence for increased risk with increased number of sexual exposures. (Sparling PF, Handsfield HH. Neisseria gonorrhoeae, in Mandel GL (Ed.) *Principles and Practice of Infectious Diseases;* 2000, p.2246.)

Children: may be asexual, exposure to infected genitals

In prepubertal children beyond the newborn period, gonococcal infection may occur in the genital tract and is almost always sexually transmitted. Sexual abuse should be strongly considered when genital, rectal, or pharyngeal colonization or infections are diagnosed in children beyond the newborn period and before puberty and in adolescents who deny that they are sexually active. Rarely, transmission from household contact can occur. (2000 *Red Book,* p. 254)

Anogenital gonorrhea in a prepubertal child indicates sexual abuse in virtually every case. All case of gonorrhea in children after the neonatal period should be reported to the local child protective service agency for investigation. (2000 *Red Book,* p.141)

Newborn: during delivery from infected mother

C. Incubation: One to two weeks; average: three to five days

D. Clinical picture: Gonorrhea (GC, gonococcal infection) typically causes urethritis in males and cervicitis in females, although females can also present with symptoms of urethral involvement. Symptoms in males generally include purulent urethral discharge and dysuria, but 10-30% are asymptomatic.

[In males,] urethral discharge and dysuria, usually without any urinary frequency or urgency, are the major symptoms. The discharge may initially be scant and mucoid, but within a day or two it becomes overly purulent . . . . . When compared

with non-gonococcal urethritis, the incubation period of gonorrhea is shorter, dysuria is usually more prominent, and the discharge is generally more profuse and more purulent, but exceptions are common. Most cases of untreated gonococcal urethritis resolve spontaneously over several weeks. A small proportion of men with urethral gonorrhea remain asymptomatic and lack signs of urethritis. . . . . Acute epididymitits is the most common complication of urethral gonorrhea, but it is nonetheless infrequent in industrialized countries. (Sparling PF, Handsfield HH. Neisseria gonorrhea, in Mandel GL (Ed.). *Principles and Practices of Infectious Diseases;* 2000, p.2247.)

Vaginal discharge in females often occurs, but 75-80% of infected women are asymptomatic. Gonococcal cervicitis can also cause cervical friability.

Many [women with gonococcal infection] remain asymptomatic or have only minor symptoms that do not lead to medical care. Thus, women with subclinical infection accumulate in the population, and in settings in which most infections are detected through screening or other case finding efforts (e.g., family planning clinics), up to 90% of women with gonorrhea may be asymptomatic. As expected, among women in whom gonorrhea is diagnosed in settings that attract symptomatic patients (e.g., hospital emergency departments), most are overly symptomatic. . . . . The dominant symptoms are those of cervicitis and sometimes urethritis and include increased vaginal discharge, dysuria (usually without urgency or frequency), and intermenstrual bleeding. The symptoms may occur in any combination, and they range widely in severity. . . . . Physical examination may or may not show purulent or mucopurulent cervicitis, such as edema in a zone of cervical ectopy or endocervical bleeding induced by genital swabbing. (Sparling PF, Handsfield HH. Neisseria gonorrhoeae, in Mandel GL (Ed.). *Principles and Practices of Infectious Diseases;* 2000, p.2248.)

Other sites of infection by *N. gonorrhoeae* include the rectum and the pharynx.

Anorectal Gonorrhea: Up to 40% of women with uncomplicated gonorrhea and a similar proportion of infected homosexual men have positive rectal cultures for N. gonorrhoeae. The rectum is the only infected site in about 40% of homosexual men and in 5% or less of women with gonorrhea. Most persons with positive rectal cultures are asymptomatic, but some patients have acute proctitis manifested by anal puritus, tenesmus, purulent discharge, or rectal bleeding. (Sparling PF, Handsfield HH. Neisseria gonorrhoeae, in Mandel GL (Ed.). *Principles and Practices of Infectious Diseases;* 2000, p.2248.)

Pharyngeal Gonorrhea: The main risk factor for the development of pharyngeal gonococcal infection is orogenital exposure. Acquired more efficiently by fellatio

than by cunnilingus, pharyngeal infection can be found in 10 to 20% of heterosexual women with gonorrhea and 10 to 25% of infected homosexual men, but it is present in only 3 to 7% of heterosexual men with gonorrhea. Gonorrhea commonly causes overt pharyngitis or cervical lymphadenitis; most pharyngeal infections are asymptomatic. . . . . The importance of documenting pharyngeal infection is debated. Most cases are asymptomatic and resolve spontaneously, transmission from the pharynx to other patients is uncommon, and the pharynx is rarely the only site of infection. . . . . On the other hand, pharyngeal infection is sometimes symptomatic and may occasionally be the source of transmission to sexual partners or systemic dissemination of N. gonorrhoeae. (Sparling PF, Handsfield HH. Neisseria gonorrhea, in Mandel GL (Ed.). *Principles and Practices of Infectious Diseases;* 2000, p.2248)

E. Diagnosis

1. Genital tract infection documented by **ANY ONE** of the following criteria (a, b, c, **or** d):
   a. Gram-stained urethral or endocervical smear showing polymorphonuclear leukocytes (PMNs) with typical Gram-negative intracellular diplococci (GNIDs); **OR**
   b. Urethral or endocervical culture positive for *N. gonorrhoeae*; **OR**
   c. Urethral or endocervical genetic probe DNA test positive for *N. gonorrhoeae* (NOTE: GenProbe test is inactivated by cervical blood; if there is menstrual bleeding present, use standard culture instead); **OR**
   d. DNA amplification detection of *N. gonorrhoeae* by PCR, LCR, SDA, or TMA test performed on endocervical, urethral or urinary specimens

2. Anorectal Infection documented by **EITHER** of the following criteria (a **or** b):
   a. Anoscopic Gram-stained smear showing GNIDs; **OR**
   b. Positive rectal culture for *N. gonorrhoeae* (NOTE: GenProbe test is ineffective for rectal specimens; use standard culture only)

3. Pharyngeal infection documented **ONLY** by positive pharyngeal culture for *N. gonorrhoeae*
   a. Pharyngeal culture indicated for symptomatic patients (i.e. sore throat) who have performed fellatio or cunnilingus, and for all patients (symptomatic or asymptomatic) with a history of orogenital contact with a patient with known or suspected genital gonorrhea

   b. Pharyngeal Gram stain not specific for gonorrhea due to colonization with oral *Neisseria* and related species
   c. Gen Probe ineffective for orophyayngeal testing; use standard culture only

F. Treatment See CDC STD Treatment Guidelines in the appendix or at: www.cdc.gov/std/treatment/default.htm

Recommended treatment of gonorrhea routinely includes a single-dose antigonococcal agent **PLUS** a course of therapy to eradicate possible co-infection with *C. trachomatis*.

Increased levels of fluoroquinolone-resistant gonorrhea now are being reported in Hawaii. Consequently, CDC now recommends that health care providers ask patients with gonorrhea if they or their sex partners could have acquired the disease in Hawaii, other Pacific Islands, or Asia, where fluoroquinolone-resistant gonorrhea is common. If so, patients should be treated with cefixime or ceftriaxone, which are other drugs that are currently recommended for treating gonorrhea, and to which no resistance has been reported.
See two articles in the appendix: Fluoroquinolone-resistance in Neisseria gonorrhoeae, Hawaii, 1999, and decreased susceptibility to azithromycin in N. gonorrhoeae, Missouri, 1999. MMWR 2000;49(37):833-7. and Public Health Dispatch: Increases in fluoroquinolone-resistant *Neisseria gonorrhoeae* in the US in 2002 and 2003.

G. Sex Partners

1. Patients should be encouraged to refer sex partners for evaluation and treatment. All sex partners of patients who have *N. gonorrhoeae* infection should be evaluated and treated for *N. gonorrhoeae* and *C. trachomatis* infections if their last sexual contact with the patient was within 60 days before onset of symptoms or diagnosis of infection in the patient. If a patient's last sexual intercourse was >60 days before onset of symptoms or diagnosis, the patient's most recent sex partner should be treated. Patients should be instructed to avoid sexual intercourse until therapy is completed and they and their sex partners no longer have symptoms.

2. Refer "high-risk" patients with GC, who meet the following criteria, to the Disease Intervention Program for follow-up:
   a. Young adolescents (age <16 years)
   b. Persistent gonorrhea after treatment (treatment failure)
   c. Patients with gonorrhea complications (e.g. PID, DGI)
   d. Patients with a second episode within one year
   e. Patients who request assistance in locating or notifying their sex partner(s)

H. Patient Education

1. Transmission of GC and *CT*
2. Recognition of symptoms to assure rapid access to health care
3. Importance of taking medication
4. Complications of disease and medication
5. Safer sex (condom usage)

6. Avoid intercourse until treatment is completed and no symptoms are present

Websites

DHSS Disease Directory: Gonorrhea
http://www.dhss.state.mo.us/GLRequest/ID/Gonorrhea.html

CDC. STD Facts & Information: Gonorrhea
http://www.cdc.gov/nchstp/dstd/disease_info.htm#Gonorrhea

CDC. Pelvic inflammatory disease (PID).
http://www.cdc.gov/nchstp/dstd/Fact_Sheets/FactsPID.htm

CDC. Gonococcal Isolate Surveillance Project (GISP)
http://www.cdc.gov/ncidod/dastlr/gcdir/Resist/gisp.html

NIAID. Gonorrhea.
http://www.niaid.nih.gov/factsheets/stdgon.htm

NIAID. Pelvic Inflammatory Disease.
http://www.niaid.nih.gov/factsheets/stdpid.htm

National Network of STD/HIV Prevention Training Centers (PTCs).
Curriculum Outline: Clinical STD Training Courses: Gonorrhea
http://depts.washington.edu/nnptc/core_training/clinical/clinical_curriculum/gonorrhea.html